REVISIONS

LT	DESCRIPTION	DATE	APPROVED
A	Update referenced documents, Edit 2.1 and replace 6.4.	24 Apr 00	Kendall Cottongim
B	Delete P/N and substitute PIN, editorial changes, update to latest DSCC DWG format	05 Mar 03	Kendall Cottongim

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
DEFENSE LOGISTICS AGENCY
DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OHIO 43216-5000

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

Prepared in accordance with ASME Y14.100 Selected item drawing

REV																						
PAGE																						
REV STATUS OF PAGES	**REV**		B	B	B	B	B	B	B													
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PMIC N/A	**PREPARED BY** David Corbett	**DESIGN ACTIVITY** **DEFENSE ELECTRONIC SUPPLY CENTER** **DAYTON, OH 45444-5000**
Original date of drawing 15 February 1990	**CHECKED BY** Ken Beymer **APPROVED BY** Randy Larson	**TITLE** **FUSE, ENCLOSED LINK; MINIATURE, FOR PRINTED CIRCUIT APPLICATION, NONINDICATING**
	SIZE A / **CODE IDENT. NO.** 14933	**DWG NO.** 89096
	REV F	**PAGE** 1 **OF** 7

AMSC N/A 5920-E052

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1. SCOPE

1.1 Scope. This drawing describes the requirements for a family of electrical surge arrestors used for dc overvoltages.

1.2 Part or Identifying Number (PIN). The complete PIN is as follows:

89096-	-001
Drawing number	Dash number (See table I)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

DoD-D-1000 - Drawing, Engineering and Associated List.
MIL-PRF-23419 - Fuse, Cartridge, Instrument Type, General Specification for.

(Unless otherwise indicated, copies of above specifications, standards, and handbooks are available from the Document Automation and Production Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Drawing precedence. This drawing takes precedence over documents referred to herein and shall be interpreted in accordance with DoD-D-1000.

3.2 Interface and physical dimension requirements. See figure 1.

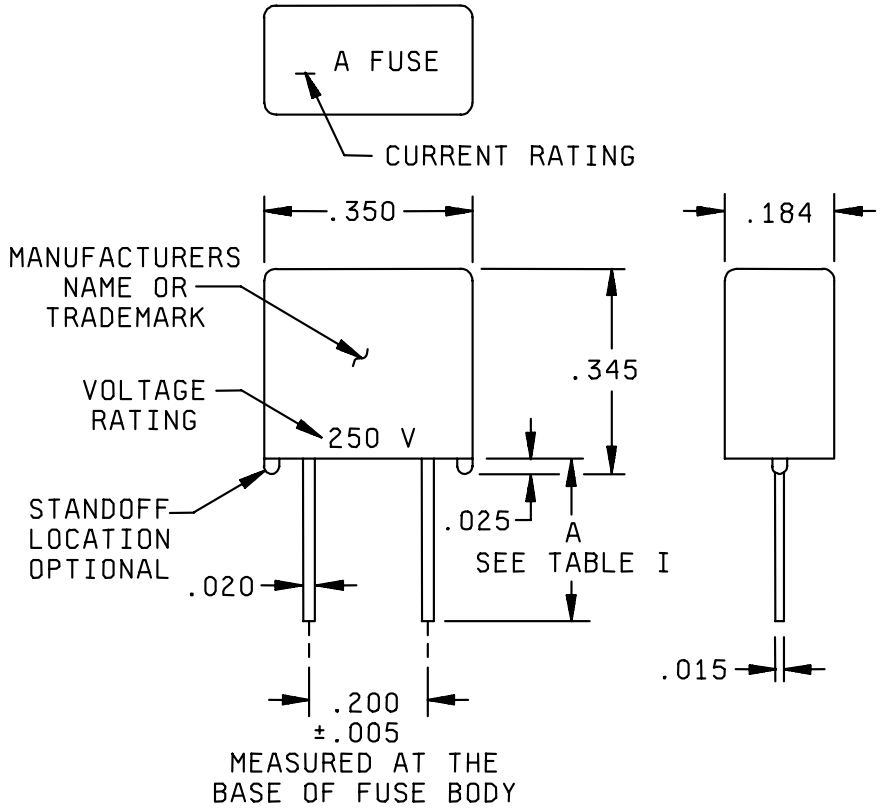
3.3 Mounting. Termination style B (see table I) is intended to be directly soldered onto printed wiring board. Termination style C (see table I) is intended to be used with the applicable socket. Socket shall be Bussmann PCS-A or equivalent.

3.4 Characteristic. The characteristic is described as a “normal” or “instantaneous” overload interrupt time in accordance with table II and MIL-PRF-23419.

3.5 Current rating. See table I.

3.6 Voltage rating. See table I.

3.7 Current-carrying capacity. Current-carrying capacity shall be: 105 percent of rating at -55°C; 100 percent of rating at +25°C; 80 percent of rating at +85°C. The temperature rise of the case, body, or terminals shall, at no point, rise more than +80°C above the ambient air temperature.



Inches	mm
.005	0.13
.015	0.38
.020	0.51
.025	0.64
.184	4.67
.200	5.08
.345	8.76
.350	8.89

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance are ±0.010 (0.25 mm) for two place decimals and ±0.005 (0.13 mm) for three place decimals.

FIGURE 1. Design and dimensions.

TABLE I. Fuse dash numbers and applicable characteristics.

Part or identifying number (PIN) 89096	Dimension A (see figure 1) 1/ 2/		Termination style	Maximum voltage rating	Current rating (amperes)
	Inches	mm			
001	0.780	19.81	B	250	1/2
002	0.130	3.30	C		
003	0.780	19.81	B	250	3/4
004	0.130	3.30	C		
005	0.780	19.81	B	250	1
006	0.130	3.30	C		
007	0.780	19.81	B	250	1-1/2
008	0.130	3.30	C		
009	0.780	19.81	B	250	2
010	0.130	3.30	C		
011	0.780	19.81	B	250	2-1/2
012	0.130	3.30	C		
013	0.780	19.81	B	250	3
014	0.130	3.30	C		
015	0.780	19.81	B	250	5
016	0.130	3.30	C		

1/ Tolerance for 0.780 inch dimension is ±0.010 (terminal style B).
2/ Tolerance for 0.130 inch dimension is ±0.020 (terminal style C).

TABLE II. Overload interrupt times.

Percent of current rating	Overload interrupting time -55°C through +85°C	
	Minimum	Maximum
200	0	15 seconds
300	0	1 second

3.8 Resistance, maximum cold. See table III.

3.9 Overload interrupt. Overload interrupt shall be in accordance with table II and MIL-PRF-23419.

3.10 Maximum current clearing I^2T. When fuses are tested, the amount of ampere-squared seconds passed by the fuse during melting, arcing and clearing shall not exceed the value specified in table III.

TABLE III. Fuse overload and resistance data.

PIN 89096-	Maximum clearing (I^2T) (ampere^2 seconds)					Maximum cold resistance (ohms) 1/
	125 volts			250 volts		
	50 A	1,000 A	10,000 A	35 A	50 A	
001, 002	0.006	0.006	0.006	0.006	0.006	1.90
003, 004	0.016	0.016	0.016	0.016	0.016	0.85
005, 006	0.020	0.020	0.020	0.020	0.020	0.56
007, 008	0.090	0.090	0.090	0.090	0.090	0.28
009, 010	0.200	0.200	0.200	0.200	0.200	0.17
011, 012	0.300	0.300	0.300	0.300	0.300	0.11
013, 014	0.750	0.750	0.750	0.750	0.750	0.08
015, 016	7.000	5.000	5.000	---	---	0.026

1/ Measured at 10 percent or less of rated current.

3.11 Shock. Shock shall be in accordance with method I of MIL-PRF-23419. Termination style B shall be mounted on a printed circuit board. Termination style C shall be mounted in applicable socket.

3.12 Thermal shock. Thermal shock shall be in accordance with method 107, test condition B, of MIL-STD-202.

3.13 Vibration. Vibration shall be in accordance with method 204, test condition C (10-2000 Hz), of MIL-STD-202. Termination style B shall be mounted on a printed circuit board. Termination style C shall be mounted in applicable socket.

3.14 Moisture resistance. Moisture resistance shall be in accordance with MIL-PRF-23419.

3.15 Insulation resistance. Insulation resistance shall be in accordance with MIL-PRF-23419.

Following the I^2T test, insulation resistance shall be 10,000 ohms minimum.

3.16 Salt spray. Salt spray shall be in accordance with MIL-PRF-23419.

3.17 Solderability. Solderability shall be in accordance with MIL-PRF-23419.

3.18 Resistance to soldering heat. Resistance to soldering heat shall be in accordance with MIL-PRF-23419.

3.19 Marking. Fuses shall be marked with the current and voltage rating as shown on figure 1. Fuses can be marked with the manufacturer's part number, name or trademark. The unit package shall be marked in accordance with 5.2 herein.

3.20 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as a suggested source of supply (see 6.4).

3.21 Statement in lieu of group A testing. The acquiring activity, at its discretion, may accept a statement of compliance in lieu of the manufacturer performing the group A inspection (see 6.2c).

3.22 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.23 Workmanship. Workmanship shall be in accordance with MIL-PRF-23419.

4. VERIFICATION

4.1 Conformance inspection.

4.1.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the group A inspection of MIL-PRF-23419.

4.1.2 Inspection of packaging. Inspection of packaging shall be in accordance with MIL-PRF-23419.

4.1.3 Maximum current clearing I^2T. The maximum clearing I^2T shall be determined from an oscillogram showing the current trace. The determination shall be made by application of Simpson's rule or the use of an integrating planimeter as shown in U.L. Standards 198C, 198D, and 198E. Fuses shall be subjected to rms symmetrical currents with a tolerance of +20, -0 percent. The power factor shall be 95 to 100 percent. The closing angle shall be essentially at zero of the voltage wave (maximum offset) or later, so as to produce start of arcing within 30 electrical degrees prior to system peak voltage. The test voltage shall be not less than the rated voltage (see table III). The maximum peak voltage occurring during the interruption shall be not more than 3000 volts. This voltage shall be measured with an instrument having a frequency response that is linear from 50 to 300 hertz.

5 PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Departments or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Marking. The unit package shall be marked with the DSCC drawing PIN (see 1.2), DSCC CAGE code (14933), the manufacturer's CAGE code, date code, and lot symbol as a minimum.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Devices conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application.

6.2 Ordering data. The contract or purchase order should specify the following:

a. Complete PIN (see 1.2).

b. Requirements for delivery of one copy of the conformance inspection data or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.

c. Whether the manufacturer performs the group A inspection or provides a statement of compliance in lieu of performing the group A inspection (see 3.22).

d. Requirements for notification of change of product to the contracting activity, if applicable.

e. Requirements for packaging and packing.

6.3 Users of record. Coordination of this document for future revisions are coordinated only with the suggested sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing should be in writing to: Defense Supply Center, Columbus, ATTN: DSCC/VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614) 692-0556 or DSN 850-0556.

6.4 Suggested sources of supply. Suggested sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact Defense Supply Center, Columbus, ATTN: DSCC-VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614)-692-0556 or DSN 850-0556.

DSCC drawing PIN 89096- 1/	Vendor similar designation or type number	Vendor CAGE	Vendor name and address
001	PCB1/2		
002	PCC1/2		
003	PCB3/4		
004	PCC3/4		
005	PCB1		
006	PCC1		
007	PCB1 1/2	71400	Bussmann Division Cooper Industries P.O. Box 14460 St. Louis, MO 63178 (314) 394-2877
008	PCC1 1/2		
090	PCB2		
010	PCC2		
011	PCB2 1/2		
012	PCC2 1/2		
013	PCB3		
014	PCC3		
015	PCD5		
016	PCE5		

1/ Parts must be purchased to this DSCC PIN to assure that all performance requirements and tests are met.